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TOXICITY ASSESSMENT of L-ASCORBATE 1 - (2-HYDROXYETHYL) - 4,6-DIMETHYL-1,2-DIHYDROPYRIMIDINE-2-ONE on DAPHNIA CULTURE

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Abstract. Pyrimidine derivatives make up one of the most extensive groups of substances involved in medicine, agriculture, etc. L-ascorbate 1-(2-hydroxyethyl)-4,6-dimethyl-1,2-dihydropyrimidine-2-it is a conjugate of xymedone and ascorbic acid, has an actoprotective and anti-catabolic effect.[1]

The aim of this work is to evaluate the toxicity of a new analog of the drug xymedon-L-ascorbate 1-(2-hydroxyethyl)-4,6-dimethyl-1,2-dihydropyrimidine-2-one, on a laboratory culture of *Daphnia magna* S.

The acute toxic effect of the compound solutions was determined by the mortality of *Daphnia* during the exposure period of 96 hours. The criterion of acute toxicity was the death of 50 % or more Daphnia in the test water, provided that the death rate in the control experiment did not exceed 10 %. The toxicity of each dilution was determined in 5 parallel series. Series with cultivation water were used as a control.

The chronic toxic effect of solutions of the studied compound on *Daphnia* was determined by mortality and changes in their fertility for a period of up to 21 days. The criterion of chronic toxicity was the death of 20 % or more and a significant deviation in fertility from the number of surviving test organisms compared to the control group. The toxicity of each dilution was determined in 5 parallel series.

During the study of acute toxicity of xymedon conjugate and ascorbic acid, a lethal concentration of LC5048 = 272 mg/l was determined. It is shown that the studied compound belongs to the category of "practically non-toxic" substances (toxicity class V) according to the degree of exposure to *Daphnia magna*.

The studied compound at a concentration of 1/5 of LC50 under conditions of a single seed has an increase in the mortality of *Daphnia* in the first two generations. In the following generations, the survival rate is restored to the control level. Survival at concentrations of 1/10, 1/30, and 1/60 of LC50 remained at the control level. Under conditions of constant priming, the concentration of 1/5 of the LC50 increases the mortality of *Daphnia*. There is no chronic embryotoxic effect of the studied compound in these concentrations.

With a single seed at a concentration of 1/10 of LC50, inhibition of *Daphnia* fecundity was observed for the F1 generation. But in subsequent generations, the fertility rate was restored to the control level. With constant priming of all generations at a concentration of 1/10 of LC50, *Daphnia* fecundity was inhibited in all generations. With a single seed, the maximum concentration that does not affect fertility and survival is 35.5 mg / l. With constant priming, the maximum concentration that does not affect survival was 35.5 mg / l, and 11.8 mg/l for fecundity.

References

1. A. B. Vyshtakalyuk Pirimidine derivatives as hepatoprotective agents / A. B. Vyshtakalyuk, N. G. Nazarov, V. V. Zobov, V. E. Semenov, I. V. Galyametdinova, G. V. Tcherepnev, V. S. Reznic // International Journal of Risk and Safety in Medicine. – 2015. – P. 78–79.

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